Get the tools you need for your water quality project

Clean Water starts with you

New tools for use both in the field and in the office can help simplify and speed the watershed assessment process. Read on to learn more about the latest tools available from the Iowa Department of Natural Resources to help you improve water quality.

GIS models

The DNR has developed two GIS-based models. The first assesses erosion rates of a watershed, based on using RUSLE, watershed land use and conservation practices data to estimate erosion rates. This model calculates only sheet and rill erosion.

The second model assesses sediment delivery by estimating how much sediment from a site reaches the receiving stream.

The model tracks sediment to the nearest discharge point into a stream and assumes all sediment that reaches the stream will eventually reach a lake or other water body.

This model uses sheet and rill erosion information from other GIS models. Data on gully erosion must be provided by local staff.

If GIS capabilities are not available locally, the DNR may be able to assist.

Tablet Computers for Watershed Assessment

These computers, about the same size as a notebook, can be taken out in the field to speed up the data entry process.

With the tablet, you can electronically enter data into GIS programs right in the field.

The tablet offers a touch screen that is visible both indoors and outdoors. It also comes with GPS tracking and ArcView GIS programs, which show watershed assessment data, watershed boundaries, field boundaries and aerial color infrared photos.

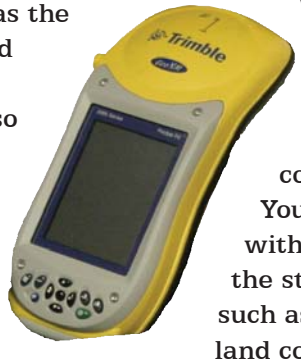
Users can mark the locations of existing conservation practices as well as gullies, livestock operations and other points of interest. Knowing the location of existing practices allows for increased accuracy when modeling soil erosion and sediment delivery.

Use the tablet to inventory:

- Land use
- Open feedlots
- CAFOs
- Sediment basins
- Highly eroded areas
- Grade stabilization structures
- Gully erosion
- Streambank erosion
- Grassed waterways
- Filter strips
- Terraces

Handheld GIS Units for Stream Assessment

With similar benefits as the tablet computer, hand-held GIS (geographic information systems) units are also available to assist with stream corridor and gully assessments.



These units are one part of the stream assessment process known as RASCAL, or Rapid Assessment of Stream Conditions Along Length.

The built-in GPS has one to three meter accuracy and the unit is equipped with a touch screen, all-day battery, outdoor display and is waterproof and drop-resistant. It also offers a customized version of ArcPad for easy data collection.

You can collect valuable information with the tool as you walk in or near the stream. The tool logs variables such as streambank stability, substrate, land cover and more. The data allows watershed managers to identify priority areas for conservation practices.

DNR

Sediment Delivery Calculator

A newly developed computer-based tool from the DNR simplifies the process of calculating sediment delivery reductions from conservation practices.

The Sediment Delivery Calculator evaluates land cover types, soil erosion characteristics, landform region variables and more to calculate load reductions achieved from implementing conservation practices.

The calculator can be loaded onto your own computer. It can help staff develop a watershed project plan and can help assess the effectiveness of conservation practice options.

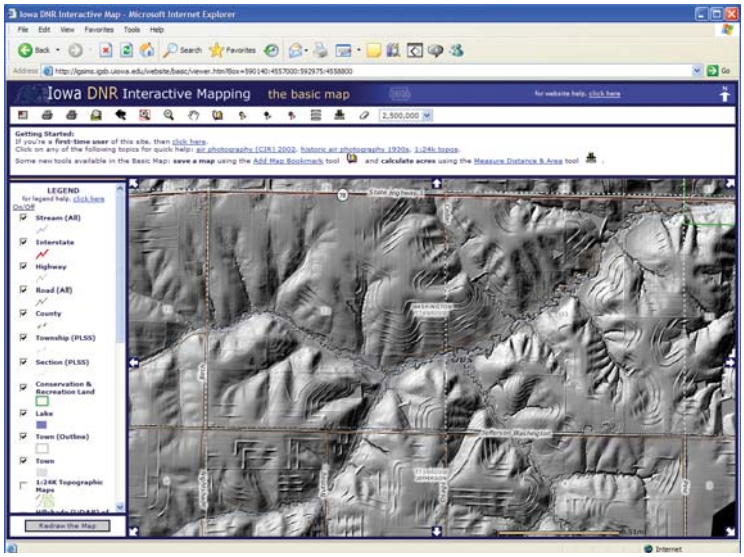
In addition, it can be used to report project accomplishments to the public and funding agencies.

Interactive mapping website

The DNR's interactive mapping website at www.iowadnr.gov provides easy access to a variety of watershed data.

Interactive mapping can help landowners and agriculture and conservation professionals in a number of ways:

- Print customized maps of a property
- Determine watershed boundaries
- Pinpoint problem areas
- Determine need for and placement of conservation practices
- Collect information for manure management plans
- Determine drainage areas
- Determine land use trends over time
- Locate soil information
- Locate resource information on a property, such as highly erodible soils and timber.



Interactive LiDAR map from the DNR's mapping website.

Color infrared photography

One option available on the DNR's interactive mapping website is statewide color infrared (CIR) aerial photography. Completed in 2002, the aerial photos can be helpful in locating resource information on a property, finding problem areas and in scouting sites for potential conservation projects.

LiDAR

The DNR is leading a multi-agency effort to map the entire state using a new technology. LiDAR, which stands for Light Detection and Ranging, is a process of scanning the earth with lasers from an airplane to obtain accurate elevation data. LiDAR is accurate within eight inches of actual elevations, while current data has an accuracy of plus or minus five feet.

The mapping is tentatively scheduled for fall 2006, spring 2007 and fall 2007 through a contract with the U.S. Geological Survey. Funding from partners such as NRCS, IDALS and Iowa DOT made the project possible.

Initial data will be available free of charge at www.iowadnr.gov within a few months after collection. The project also hopes to obtain new color infrared aerial photography for the entire state.

Get the tools

For more information on using the tools, please contact the following DNR staff:

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